Amendments to the Specification:

Please amend the Summary of the Invention in the application as filed by:

1. deleting in their entirety the two paragraphs that start at line 11 on page 7 and end at line 27 on that page; the three paragraphs that start at line 11 on page 8 and end at line 18 on page 9; and the one paragraph that starts at line 15 on page 10 and ends at line 33 on that page;
2. amending the paragraph that starts at line 28 on page 7 and ends at line 10 on page 8 as follows:

The invention is ~~further~~ embodied as a method for controlling a process that comprises ~~has the steps of~~:

a) converting at least one submodel of a nonlinear model having two or more submodels to a linear model, each of the two or more submodels having a predetermined one of two or more model predictive controllers associated therewith, the linear model for operating the associated one of the two or more controllers;

b) using the nonlinear model in a real time optimizer to compute targets for all of the two or more model predictive controllers, a predetermined subset of the computed targets associated with a respective one of the two or more controllers;

c) passing each of the predetermined subsets of the computed targets associated with a respective one of the two or more model predictive controllers to the associated one of the two or more controllers; and

d) passing the linear model to the associated one of the two or more controllers.

3) adding new paragraphs at the end of the Summary of the Invention as follows:

The invention is also embodied as a method for controlling a process comprising:

a) receiving plant measurement variables from a

regulatory control system;

b) applying said plant measurement variables to update one or more variables of a nonlinear model;

c) linearizing said updated nonlinear model when a change in said one or more of said model variables has exceeded an associated predetermined threshold; and

d) passing a MPC format model converted from said linearized model to a model predictive controller.

The invention is further embodied as a method for controlling a process comprising:

a) receiving plant measurement variables from a regulatory control system;

b) applying said plant measurement variables to update one or more variables of a nonlinear model;

c) linearizing said updated nonlinear model; and

d) passing a MPC format model converted from said linearized model to a model predictive controller,

said updated nonlinear model linearized when one or more model prediction errors in said MPC format model currently operational in said model predictive controller has exceeded an associated predetermined threshold.

The invention is also further embodied as a method for controlling a process comprising:

a) applying simulation stimuli to update one or more variables of a nonlinear model comprising:

(i) pretreating said simulation stimuli;

(ii) reconciling said pretreated simulation stimuli; and

(iii) using said reconciled and pretreated simulation stimuli to update said nonlinear model;

b) linearizing said updated nonlinear model when a change in said one or more of said model variables has exceeded an associated predetermined threshold;

c) converting said linearized model to a full order state space model;

d) creating from said full order state space model a state space model having fewer states than said full order state space model;

e) converting said fewer states state space model to a MPC format model; and

f) evaluating the performance of said MPC format model with the tuning for a presently existing model of said process in a model predictive controller versus the performance of said presently existing model with said tuning and either:

passing said MPC format model with said presently existing model tuning to a model predictive controller when said performance evaluation of said MPC format model exceeds a first predetermined limit; or

computing new tuning for said MPC format model when said performance evaluation falls below said first predetermined limit and repeating said evaluations; or

returning said MPC format model to said creating a MPC format model having fewer states than said full order state space model to change the number of states in said MPC format model when said performance of said MPC format model falls below said first predetermined limit.

The invention is further embodied as a method for controlling a process comprising:

a) applying simulation stimuli to update one or more variables of a nonlinear model comprising:

(i) pretreating said simulation stimuli;

(ii) reconciling said pretreated simulation stimuli; and

(iii) using said reconciled and pretreated simulation stimuli to update said nonlinear model;

b) linearizing said updated nonlinear model when a change in said one or more model prediction errors in a MPC format model currently operational in a model predictive controller has exceeded an associated predetermined threshold;

c) converting said linearized model to a full order state space model;

d) creating from said full order state space model a state space model having fewer states than said full order state space model;

e) converting said fewer states state space model to a MPC format model; and

f) evaluating the performance of said MPC format model with the tuning for a presently existing model of said process in a model predictive controller versus the performance of said presently existing model with said tuning and either:

passing said MPC format model with said presently existing model tuning to a model predictive controller when said performance evaluation of said MPC format model exceeds a first predetermined limit; or

computing new tuning for said MPC format model when said performance evaluation falls below said first predetermined limit and repeating said evaluations; or

returning said MPC format model to said creating a MPC format model having fewer states than said full order state space model to change the number of states in said MPC format model when said performance of said MPC format model falls below said first predetermined limit.

The invention is also further embodied as a method for controlling a process comprising:

a) applying simulation stimuli to update one or more variables of a nonlinear model comprising:

(i) pretreating said simulation stimuli;

(ii) reconciling said pretreated simulation stimuli; and

(iii) using said reconciled and pretreated simulation stimuli to update said nonlinear model;

b) linearizing said updated nonlinear model when a change in said one or more of said model variables has exceeded an associated predetermined threshold;

c) converting said linearized model to a MPC format model; and

d) passing said MPC format model to a model predictive controller comprising:

evaluating the performance of said MPC format model with the tuning for a presently existing model of said process in a model predictive controller versus the performance of said presently existing model with said tuning and either:

passing said MPC format model with said presently existing model tuning to a model predictive controller when said performance evaluation of said MPC format model exceeds a first predetermined limit; or

computing new tuning for said MPC format model when said performance evaluation falls below said first predetermined limit and repeating said evaluations.

The invention is also further embodied as a method for controlling a process comprising:

a) applying simulation stimuli to update one or more variables of a nonlinear model comprising:

(i) pretreating said simulation stimuli;

(ii) reconciling said pretreated simulation stimuli; and

(iii) using said reconciled and pretreated simulation stimuli to update said nonlinear model;

b) linearizing said updated nonlinear model when a change in said one or more model prediction errors in a MPC format model currently operational in a model predictive controller has exceeded an associated predetermined threshold;

c) converting said linearized model to a MPC format model; and

d) passing said MPC format model converted from said linearized model to a model predictive controller comprising:

evaluating the performance of said MPC format model with the tuning for a presently existing model of said process in said model predictive controller versus the performance of said presently existing model with said tuning and either:

passing said MPC format model with said presently existing model tuning to a model predictive controller when said performance evaluation of said MPC format model exceeds a first predetermined limit; or

computing new tuning for said MPC format submodel when said performance evaluation falls below said first predetermined limit and repeating said evaluations.